

MAINE DEPARTMENT OF MARINE RESOURCES

SEEDER PROGRAM

Lobster Informational Leaflet #3

September 1974

SEEDER PROGRAM

The "Seeder Program" is an industry plan whereby the Department of Marine Resources buys berried females from pound owners and then releases these lobsters in the ocean. There are different opinions among the fishermen regarding this practice that is supposed to provide an adequate spawn stock. Some fishermen maintain that it is the salvation of the lobster industry, while others say that it is a complete waste of money.

In this leaflet we will attempt to present the biological view so that the reader can make his own decision on what is the best approach to maintain an adequate spawning stock of lobsters in the ocean.

Simplifying a very complex reproduction cycle, we can say that a stable population of lobsters needs only 2 young from each berried female to survive from egg to mature size in order to keep the population at the same level (if 4 survived, the population would double!!). In the case of 2 young surviving, we would need 9 million berried females to produce a population of 18 million lobsters 7 years later (it takes approximately 7 years for a lobster to grow from the egg to legal size).

Turning to an actual situation in the lobster fishery in Maine, we estimated that there were 5.5 billion eggs produced in 1967; 7 years later (1973) there were approximately 11.7 million lobsters in the first legal shedder-group caught in the commercial catch. Assuming that these eggs were responsible for this subsequent catch, we can say that there was a survival of 21/100 or 1% (divide 11.7 million by 5.5 billion), or a death rate of 99.79% from egg to legal size. While this percentage of mortality is hard to believe, it has been documented for many other commercial species in the ocean. This is the very reason that we need such a high number of viable lobster eggs in the ocean. Although more eggs do not guarantee more legal

lobsters in the following years, there certainly has to be some minimum number of eggs produced and then surviving to legal size or the commercial catch would be in a dangerous decline.

Some people have suggested that a hatchery is the solution to reduce mortality and thereby maintain the commercial catch. For the 6.7 billion eggs of natural production, we would need 76,905 acres of water for the small lobsters from these eggs (2 young per surface foot of water). As they grow toward legal size, they would need at least double the space of 153,810 acres of water. That is a mighty big hatchery, the cost of which would knock a dent in the budget for the entire State of Maine!! Just in passing, we have not considered the food source nor the disease problem of confined lobsters. Disease can destroy an entire population in a restricted area; especially susceptible are the young lobsters.

An alternative is to use the approximate 19 million acres of water in the Gulf of Maine. This should provide all of the space and food requirements that lobsters of any size would need. In this case, the important consideration is an adequate number of eggs in the ocean to sustain a profitable commercial catch.

In the "Seeder Program," the State buys from 10 to 35 thousand berried females per year. With the already demonstrated low survival rate from egg to legal size, there is a possibility that this number of berried females could produce about 1 million legal lobsters 7 years later (.21% of 35 thousand females multiplied by 15 thousand eggs per female). However, this is only 5.5% of what is needed to maintain a possible catch of 18 million lobsters. A simple solution might be "buy more seeders." The Department of Marine Resources is buying all of the berried females that the lobster pounds in Maine produce.

The reason for this limited number of berried females can be understood when we consider the main points made by two earlier informational leaflets. These points are: (1) leaflet #1 described the sizes of lobsters in the commercial catch; that is, 74 to 81% of the catch of lobsters along our coast is from 3-3/16 to 3-1/2 inches (gauge measure), and (2) leaflet #2 established that almost all females could have seeds at 4 inches, while approximately 50% become seeders between 3-1/2 and 3-3/4 inches (gauge measure). Therefore, the combination of leaflet information indicates that there are relatively few females producing seeds in our lobster pounds or in the ocean because most females are caught before they can reproduce.

Another point against "buy more seeders" is the fact that our lobster pounds only hold about 4-1/2 million pounds of male and female lobsters (about 3 million lobsters in count). Considering all of the earlier points then there is no way the "Seeder Program" can produce enough berried females to maintain the commercial lobster catch.

Some have suggested purchasing berried females from fishermen. Remember that these female lobsters are from the natural population in the ocean. It makes little sense to buy these seeders and put them back in the ocean where they had been. This will change nothing in the spawning population.

Others believe that the maximum size is the saviour of the lobster fishery, the supposition being that females above this measure provide an adequate number of eggs. We know from sampling the commercial catch that only 3/4 of 1% of the population is made up of lobsters from 4-1/2 to 5 inches (gauge measure). When these lobsters shed, they will be over the maximum measure. Therefore, there can be no more than 3/4 of 1% of newly molted lobsters from the legal population added above the maximum size each

year. It can be suggested that the accumulative effect year after year, in addition to "V" notched lobsters, would be to build up the oversize population of lobsters. In order to measure this, we have used different types of gear including scuba diving observations, with the result that we have counted even less than 3/4 of 1% of oversize lobsters in comparison to sub-legal and legal sized lobsters. Also, a small tagging study during the 50's demonstrated that there is movement of oversize lobsters toward the coast of Massachusetts. These factors could account for the low number of oversize lobsters in our sampling along the Maine coast. Therefore, it doesn't seem logical to expect the oversize lobsters to produce enough seed stock in our own area.

Another important consideration in all of the preceding discussion is the reproductive cycle of female lobsters. After a female reaches a size to have eggs, she will probably seed in May or June. These eggs are retained into the following year until they are hatched in July or August. After the eggs are hatched off, this female might shed in the late summer or early fall and while in a soft condition, she is mated by the male. Then it is possible for her to have eggs again the following May or June. The shortest elapsed time for a female to have one batch of eggs to the next is approximately 2 years. So every seeder or "V" notched female cannot hatch off eggs each year.

Taking all of the above discussion into consideration, it seems to make better sense to increase the measure to 3-1/2 inches (gauge measure). In this way, we will have a new batch of female lobsters coming into the spawning population each year. This new crop of berried females (due to the increased measure) will produce more eggs than we have now. With this situation, there is no need to "V" notch berried females because there would be more eggs than

at present. After this larger percentage of females has hatched eggs, these females could be caught without any harmful effects to the lobster population. In other words, let this larger percentage of seeders hatch once and then catch them.

We know that our opinions are not popular with some of the people in the lobster industry. Nevertheless, we must present the facts as we see them. Our role is only to advise and then the fishermen through their legislators actually decide the course of action. Under the present "Seeder Program" we can only hope that more young survive from each seeder. In all likelihood this won't happen; then the best alternative is to raise the gauge measure to insure a more abundant number of eggs.

Best regards,

The Lobster Research Project
September, 1974
